New Tropical American Ferns—V.[1]

WILLIAM R. MAXON

The three species described herewith are from Jamaica. The first of them is evidently very rare, having been collected only once and in small quantity, and it is a special pleasure to dedicate it to Mr. C. E. Randall, from whose home, "House Hill," field work in the Cuna Cuna mountain region was carried out in the early summer of 1926, as elsewhere described.[2]

Polypodium Randalli Maxon, sp. nov.

Subgenus *Eupolypodium*. Plants epiphytic, small, very delicate. Rhizome erect, 2–3 mm. high, about 1 mm. thick, densely paleaceous at apex; scales lance-ligulate, 0.7–1 mm. long, thin, yellowish-brown, reticulate, hair-pointed and sparsely long-ciliate (the hairs delicate, whitish, laxly curved), 6–10 cells broad near base; cells subrectangular, with very large lumina, the partition walls thin but definitely sclerotic, the outer walls hyaline. Fronds 5–12, laxly ascending, cespitose, 2–5 cm. long, exstipitate; blades linear or narrowly oblanceolate, 5–8 mm. broad, acutish at apex, acute or subattenuate at base, obliquely pinnatisect throughout, the rachis blackish, filiform, flexuous, evident and minutely appressed-pubescent beneath, the hairs distant, short, whitish, geminate or subfasciculate from a branched glandular base; segments 8–16 pairs, alternate, narrowly triangular, acute or acutish, mostly 3–5 mm. long, 2–3 mm. broad at the fully adnate, oblique or subdecurrent base, the lowermost 2 or 3 pairs gradually much reduced, long-decurrent, finally evident as a flexuous greenish wing (1 mm. broad or less); segments subentire, or often subauriculate just beyond the distal base, or the largest ones with as many as 2 relatively large crenations on both distal and proximal margins; costa capillary, immersed, terminating far from the

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[2] Smiths. Misc. Coll. 78[2]: 100–111, *figs. 110–118*. 1927.

apex; vein branches few (1–4 in all), oblique, very short, terminating in conspicuous round hydathodes, the sori (1–4) also terminal, small, distant, borne near the costa, slightly impressed; sporangia glabrous. Leaf tissue delicately membranous, repand, translucent, bright green, glabrous.

Type in the U. S. National Herbarium, no. 1,182,774, collected from the densely mossy trunk of a forest tree, crest of Gossamer Peak, St. Thomas, Jamaica, altitude 800–900 meters, June 16, 1926, by William R. Maxon (no. 9280).

Among West Indian species thus far known *Polypodium Randalli* has no very near relatives. It is actually allied to *P. Alfarii* Donn. Sm., a rare and much misunderstood plant of Costa Rica and western Panama, differing from that, however, not only in its diminutive size but in its glabrous leaf tissue and glabrous sporangia, in the development of rhizome scales (*P. Alfarii* having none), and in numerous other specific characters. The specimens were not detected when collected, but were picked out, one by one, from a large thick cushion of bryophytes and Hymenophyllaceae while sorting out this material for drying.

Polypodium exornans Maxon, sp. nov.

Subgenus *Eupolypodium*. Rhizome closely branched, submulticipital, the divisions creeping, 2–4 cm. long, 4–5 mm. thick, densely imbricate-paleaceous throughout; scales firm, dark brown, lustrous, narrowly triangular-attenuate, 2.5–3.5 mm. long, 1 mm. broad at the cordate base, freely ciliate, the surfaces similarly hairy. Fronds numerous, oblique-pendent, subdistichous, close (2–5 mm. apart), 40–65 cm. long, the stipes 12–20 cm. long, 1 mm. thick, dull brown, not arcuate at apex, densely beset with pale, persistent, spreading or retrorse hairs (2–4 mm. long); blades linear, 30–50 cm. long, 3–4.5 cm. broad, abruptly acute at the slowly determinate apex (the subcaudate tip eventually 1–1.5 cm. long, lobate below), subtruncate or slightly narrowed at base, pinnatisect throughout, the rachis blackish, bearing many long stiff

oblique-spreading ferruginous hairs, these extending freely along the margins and over the upper surface of the segments, the under surfaces similarly covered with paler and somewhat shorter hairs; segments 40–60 pairs, alternate, close, oblong, 1.5–2.5 cm. long, bluntly acutish at apex, 5–6 mm. broad at middle, adnate, broadly short-decurrent (the wing triangular), rarely subdilatate at upper base, horizontal or (in larger fronds) decurved, subentire or lightly undulate, coarsely septate-glandular (chiefly at the hair-bases of the under surface); costa filiform, blackish, lightly flexuous, evident beneath nearly throughout; veins 9 or 10 pairs, simple, oblique (45 degrees), extending three-fourths the distance to the margin, terminating in minute dark punctiform hydathodes; sterile veins straight, fertile ones nearly so; sori 4–8 pairs, dorsal, 1.5 mm. broad at maturity, inframedial, the receptacle small, not spurlike; sporangia very numerous, cinnamon brown, each bearing a single griseous seta 3–5 times as long as the head of the sporangium. Leaf tissue dull green, membrano-herbaceous and semitranslucent in drying.

Type in the U. S. National Herbarium, no. 1,182,697, collected on the upper southern slope of Gossamer Peak, St. Thomas, Jamaica, altitude 750–900 meters, from tree trunk on moist forested ridge, June 14, 1926, by William R. Maxon (no. 9185).

Known to the writer from Jamaica only, but common there, particularly in the Cuna Cuna region, at the eastern end of the main Blue Mountain range (*Fredholm* 3251; *Maxon & Killip* 172; *Maxon* 8847, 9116, 9130, 9479, 10547), its most luxuriant development being in deep forest ravines near House Hill. Other specimens are as follows: Spur of John Crow Mts., opposite Mill Bank, *Maxon* 9382; deep valley of Mabess River, *Maxon* 1541, *Watt* 97; near Jumbe Spring, Portland, *Maxon & Killip* 781; Hollymount, *Maxon* 1911, 2250; Tweedside, *Maxon* 1016. The altitudinal range is from 300 to 900 meters.

The present species was called *P. asplenifolium* L. by Jenman, and was very incompletely described by him[3]

[3] Bull. Bot. Dept. Jamaica II. 4: 123. 1897.

under that name. The writer has shown,[4] however, that the name *asplenifolium* must be taken up for the widely distributed tropical American species which Jenman and most recent writers have called *P. suspensum*, the Linnaean name *suspensum* itself being of very doubtful application. From true *P. asplenifolium* L. (*P. suspensum* of authors) *P. exornans* differs constantly in many essential characters, notably in its non-geniculate, dull brown, copiously and persistently long-pilose stipes (wiry, atro-purpureous, and highly lustrous in *P. asplenifolium*); its darker, firmer, and non-ligulate rhizome scales; its oblong (rather than deltoid-oblong) segments, which are rather thin and copiously hairy on both sides (not rigid and nearly devoid of hairs beneath); and in its long solitary sporangium setae, the sporangia of *P. asplenifolium* bearing each 2 to 4 short setae which about equal the head of the sporangium in length. Incomplete specimens may be distinguished at once by the sporangia alone.

Polypodium laxifrons Liebm., sometimes recognized as a valid species, is exactly synonymous with *P. asplenifolium* L.

Dryopteris Underwoodiana Maxon, sp. nov.

Subgenus *Lastrea*. Rhizome stout, erect, arcuate, 4–10 cm. long, 1.5–2 cm. thick, densely clothed with imbricate stipe bases, freely paleaceous; scales laxly imbricate, light brown, lustrous, thin, lance-attenuate, 5–8 mm. long, deciduously short-ciliate, the surfaces obscurely pubescent at first with short whitish hairs. Fronds 6–8, cespitose, rigidly ascending, 40–65 cm. long, the stipes short (3–10 cm.), stout (2–3 mm.), dull stramineous, scaly at base, together with the rachis rather densely whitish-hirtellous; blades acutely elliptic-oblong to narrowly obovate, evenly long-acuminate at apex, rather abruptly acuminate-attenuate at base (4–7 lowermost

[4] Sci. Surv. Porto Rico 6: 411. 1926.

pairs of pinnae greatly reduced, 5–10 mm. long, successively smaller and more distant), 35–55 cm. long, 10–16 cm. broad at middle, pinnate-pinnatifid; pinnae mostly alternate (the basal ones usually opposite), numerous, subcontiguous, spreading, inserted 10–16 mm. apart, sessile, the middle ones narrowly oblong-linear, acuminate-attenuate in the outer half (the tips subcaudate), 1–1.5 cm. broad at middle, deeply pinnatifid, the costa sulcate and strigose-hispid above, unevenly pilose-hispid beneath; main segments of larger pinnae 16–20 pairs, oblique, close, oblong from a slightly broader base, 2–3 mm. broad, acutish distally in drying (the subentire margins lightly revolute), with narrow, acute, open sinuses, obliquely ciliate, the basal ones (especially the proximal) sometimes subauriculate and partially overlying the rachis; veins 6–8 pairs, oblique, strongly elevated above, evident beneath, mostly simple, the proximal basal one sometimes forked; midrib and veins freely hispid above (the interspaces hispidulous), sparsely pilose-hispidulous beneath; small basal pinnae deflexed, commonly hastate-tripartite; leaf tissue firmly chartaceo-herbaceous, translucent, dark green and lustrous above, freely resinous-glandular beneath; sori 6 or 7 pairs, medial, distant, round; indusia orbicular-reniform, thin, long-ciliate, resinous-glandular, ample but soon nearly concealed by the sporangia, the cilia protruding; sporangia numerous, glabrous.

Type in the U. S. National Herbarium, no. 1,045,385, collected in the vicinity of St. Helen's Gap, Cinchona, Jamaica, altitude 1,475 meters, on a rocky bank in thin shade, March 4, 1920, by William R. Maxon and Ellsworth P. Killip (no. 635). Besides other material from St. Helen's Gap (*Maxon & Killip* 636, 1338, 1355) the species is represented by the following specimens: Without locality data, alt. 1,500 meters, *Hart* 128; Cinchona, *Clute* 101; Moody's Gap, *Clute* 173; New Haven Gap, alt. 1,650 meters, *Maxon* 2659. The last two specimens were identified long ago by Christensen as *D. scalpturoides* var. *jamaicensis* C. Chr.; but the type collection of that variety (*Underwood* 1826, from Mount Diablo) is identical with *D. Nockiana* (Jenman) C. Chr.

Jenman, in his Synoptical List, described the present species as *Nephrodium rigidulum* Baker, which is synonymous with *D. scalpturoides* (Fée) C. Chr., a species known properly only from Cuba and Hispaniola. From this *D. Underwoodiana* differs in many characters, notably in its less coriaceous texture, its more numerous veins, its hispid midveins and veins (above), its golden resinous glands and pilose-hispid condition beneath, and especially in its medial (not submarginal) sori. The relationship with *D. Nockiana* is very much closer, but that species, as represented by a large suite of Jamaican specimens, is a plant of lower altitudes, with narrower and longer fronds, similarly glandular beneath but having the pinnæ narrower and more distant, the costae and midribs merely puberulous beneath, and the upper side of the segments non-hispid. The presence or abundance of minute stiff hairs between the veins on the upper surface is a variable character in all these species.

WASHINGTON, D. C.

Tauranga and Karewha Island

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While I was on a visit to Tauranga, about 100 miles south of Auckland, Mr. Bernard Sladden kindly offered to take me in his launch to Karewha Island. We had such a rough time on leaving the harbor, bobbing about like a cork, that Mr. Sladden feared we should not be able to land, a prediction that, fortunately for me, was not fulfilled.

The little island, six miles from Tauranga, about five acres in extent and rising to a rocky peak 300 feet above the sea, with its mantle of green, looked very beautiful on a near approach. We anchored about fifty yards from the shore in smooth water, protected by a reef and some